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SHINKO ELECTRIC INDUSTRIES CO., LTD. et al

The International Bureau transmits herewith the following document(s):

- ☒ copy of the international application as published by the International Bureau on 08 December 2005 (08.12.2005) under No. WO 2005/116300
- ☐ copy of international application as republished by the International Bureau on under No. WO
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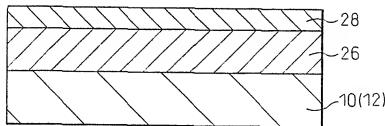
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/ 続表 /

(54) Title: EXTERNAL PALLADIUM PLATING STRUCTURE OF SEMICONDUCTOR COMPONENT AND SEMICONDUCTOR DEVICE MANUFACTURING METHOD

(54) 発明の名称: 半導体部品の外装パラジウムめっき構造及び半導体装置の製造方法



(57) Abstract: In an external plating structure of a semiconductor package, a Pd or Pd alloy film is used as a material replacing the conventional solder plating as a soldering metal. The highly reliable semiconductor component external plating structure is provided without causing problems, such as short-circuiting, due to whiskers, etc. between terminals. In the external plating structure, on the surfaces of the external connecting terminals (10, 12)

of the semiconductor component using copper or copper alloy material, Pd or Pd alloy (26) is used, replacing the conventional solder plating as a soldering metal. In the case of forming a plating film having a thickness of 0.3 μm or less, plating is performed between the material and the plated Pd or Pd alloy layer, without having a base layer or an intermediate metal layer in between. On the plating film, depending on a case, an Au or Au alloy plating (28) having a thickness of 0.1 μm or less is further formed.

(57) 要約: 半導体パッケージの外装めっき構造において、ロウ付け金属としての従来のはんだめっきに代わる材料として、Pd又はPd合金皮膜を用い、端子間におけるウィスカ等による短絡等の問題を生ずることなく、信頼性の高い半導体部品の外装めっき構造を提供する。本発明の外装めっき構造では、銅又は銅合金系素材を使用した半導体部品の外部接続端子(10、12)の表面に、ロウ付け金属としての従来のはんだめっきに代わる材料として、Pd又はPd合金(26)を用い、0.3 μm以下の厚さのめっき皮膜を形成する場合には、前記素材とめっきしたPd又はPd合金層との間に、下地層又は中間金属層を介在させることなく、前記めっきを施す、また場合によっては、更にその上に0.1 μm以下のAu又はAu合金めっき(28)を施す。



添付公開書類:

— 国際調査報告書

2 文字コード及び他の略語については、定期発行される
各 *ICT* ガゼットの巻頭に掲載されている「コードと略語
のガイダンスノート」を参照。

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2005/009286

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl.⁷ C25D7/00, H01L23/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELD SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl.⁷ C25D5/00-7/12, H01L23/50

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2005
Kokai Jitsuyo Shinan Koho	1971-2005	Toroku Jitsuyo Shinan Koho	1994-2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENT IS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X <u>Y</u>	JP 4-115558 A (Shinko Electric Industries Co., Ltd.), 16 April, 1992 (16.04.92), Page 2, upper left column, line 4 to page 4, lower left column, line 6 & EP 0474499 A2	1-4 <u>5, 6</u>
Y	JP 11-317487 A (Nissan Motor Co., Ltd.), 16 November, 1999 (16.11.99), Par. Nos. [0024] to [0033] (Family: none)	5, 6
A	JP 11-204713 A (Sony Corp.), 30 July, 1999 (30.07.99), Full text & US 6150712 A	1-4

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:	1* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"(U)" document referring to an oral disclosure, use, exhibition or other means	
"(P)" document published prior to the international filing date but later than the priority date claimed	

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